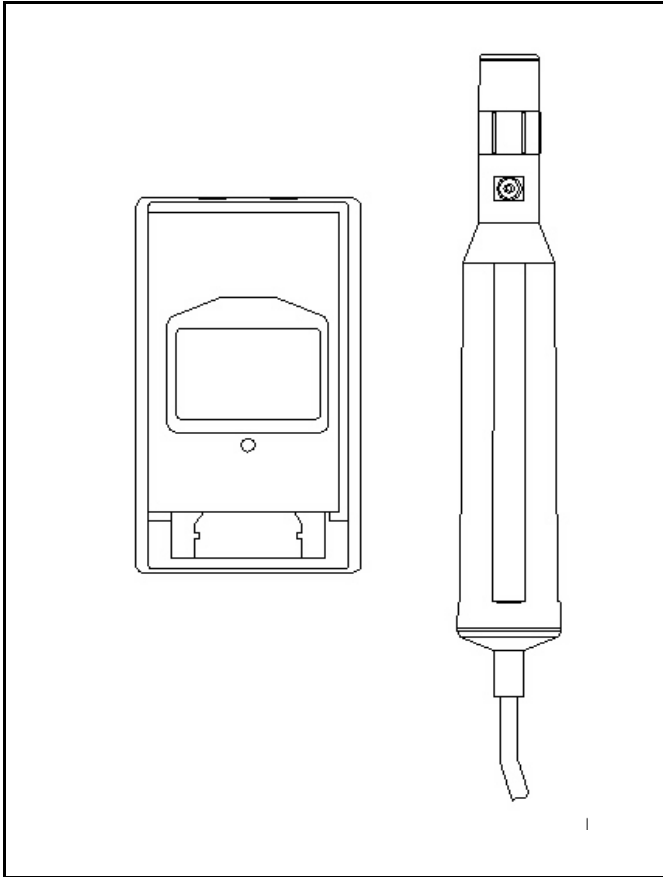


4 to 20 mA

DISSOLVED OXYGEN TRANSMITTER

Model : TR-DOT1A4

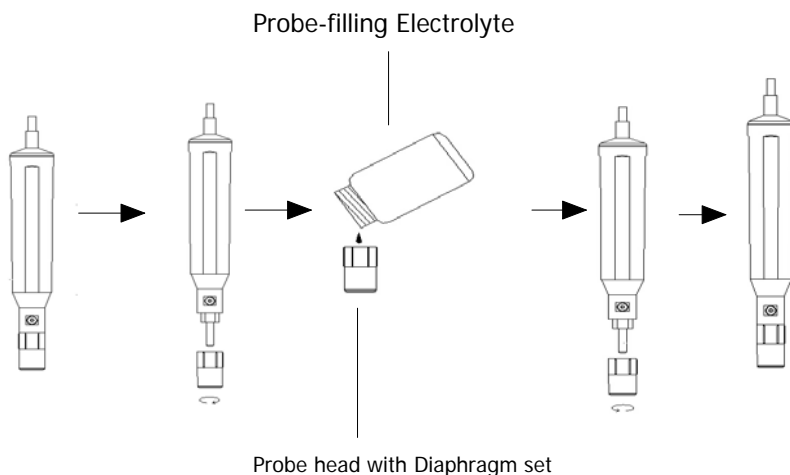


ATTENTION :



Fill the Probe's Electrolyte at first.

Intend to keep the DO probe under the best condition, when user receive the **DIGITAL OXYGEN METER** along the **PROBE**, it should fill the the Probe's Electrolyte at first.



The procedures that to fill the Probe's Electrolyte, refer the chapter 6 " PROBE MAINTENANCE ", page 10 .

Caution Symbol



Caution :

- * Do not apply the overload voltage, current to the input terminal !
- * Power off before
 - @ Disconnecting the " Power Source " from the " AC Power Input Terminal "
 - @ Disconnecting the " Output Signal Wires " from the " Signal Output Terminals "
 - @ Taking away the " Probe Plug " away from the " Input Socket :
- * Cleaning - Only use the dry cloth to clean the plastic case !

Environment Conditions

- * Installation categories II.
- * Pollution Degree 2.
- * Altitude up to 2000 meters.
- * Relative humidity 80% max.

TABLE OF CONTENTS

1. FEATURES.....	1
2. SPECIFICATIONS.....	1
2-1 General Specifications.....	1
2-2 Electrical Specifications.....	2
3. INSTALLATION.....	3
4. FRONT PANEL DESCRIPTION.....	5
4-1 Zero Adjust VR.....	5
4-2 Span adjust VR.....	5
4-3 Power Indicator.....	5
4-4 Probe Input Socket.....	5
4-5 Transmitter Output Connector.....	5
4-6 Wires Layout Socket.....	5
4-7 DIP Switch (Range 1/CAL, Range 2/DO).....	5
4-8 Windows.....	5
4-9 DO Probe Plug.....	5
4-10 DO Probe Handle.....	5
4-11 DO Probe Sensing Head.....	5
5. MEASURING CONSIDERATION.....	7
5-1 Calibration.....	7
5-2 Dissolved Oxygen(DO) measurement	9
6. PROBE MAINTENANCE.....	10
7. DIMENSION DIAGRAM.....	12
8. THE ADDRESS OF AFTER SERVICE CENTER.....	13

1. FEATURES

- * This Oxygen Transmitter is supplied with a polarographic type probe with an incorporated Temp. compensation sensor which serves for precision Dissolved Oxygen (DO), measurement.
- * Applications for Aquarium, Medical research, Agriculture, Fish hatcheries, Laboratory, Water conditioning, Mining industry, Schools & Colleges, Quality control...
- * The polarographic type oxygen probe with an incorporated Temp. sensor, high precision measurement for Dissolved Oxygen (DO) measurement.
- * DO measurement, automatic Temp. compensation from 0 to 50 °C for sensing probe.

2. SPECIFICATIONS

2-1 General Specifications

Measure Range	Range 1 : CAL (Calibration)	
	Range 2 : DO (0 - 20 mg/L)	
Output	4 - 20 mA	
	Range 1	CAL (Calibration) 12.36 mA
	Range 2	0 mg/L = 4 mA 10 mg/L = 12 mA 20 mg/L = 20 mA
Range Selector	Range 1 and Range 2. <i>@ Select on main transmitter panel</i>	
External Adjustment	ZERO VR (4 mA adjust VR)	
	SPAN VR (20 mA adjust VR)	

Max. Output Load	200 ohms.
Power Supply	90 - 260 ACV 50 Hz/60 Hz
Power Consumption	AC 110 V : Approx. 1.3 VA. AC 220 V : Approx. 1.6 VA.
Mounting	Din rail or wall.
Case	ABS plastic
Operation Temperature	0 to 50 °C (32 to 122 °F)
Operation Humidity	Less than 80 %RH
Dimension	See page 12.
Standard Accessories	Instruction manual..... 1 PC. Wires Layout Socket..... 1 PC. Oxygen probe (OXPB-TR)..... 1 PC. Spare Diaphragm (5 PCs per pack) OXDP-02..... 1 set Probe-filling Electrolyte OXEL-03..... 1 set
Optional Accessories	Oxygen probe..... OXPB-TR Spare Diaphragm (5 PCs per pack)OXDP-02 Probe-filling Electrolyte..... OXEL-03

2-2 Electrical Specifications (23± 5 °C)

Range	0 to 20.0 mg/L (liter).
Resolution	0.1 mg/L.
Accuracy	0.4 mg/L.

Remark :

Spec. tested under the environment RF Field Strength less than 3 V/M & frequency less than the 30 MHz only.

3. INSTALLATION

- 1) Connecting the " Power Supply " (90 to 260 ACV) and the " 4 - 20 mA Output wires " to the " Wires Layout Socket " (4-6, Fig. 1) as following :

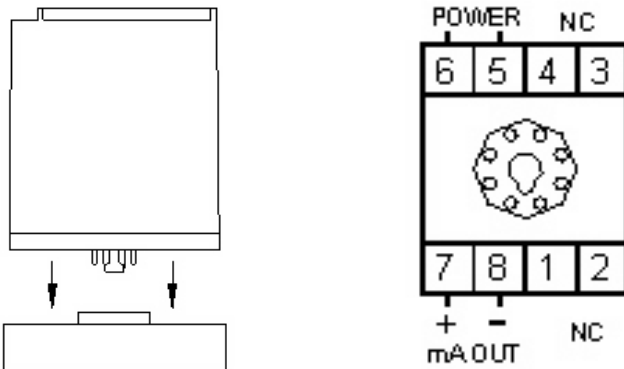
Terminal 5, Terminal 6 :

Power supply (90 to 260 ACV, 50/60 Hz)

Terminal 7 (+ output), Terminal 8 (- output) :

4 to 20 mA signal output to the external Indicator, Controller or Data access system... that can accept 4 to 20 mA signal.

- 2) Plug in the " Transmitter Output Connector " (4-5, Fig. 1) to the " Wires Layout Socket " (4-6, Fig. 1).



- 3) Insert the " DO Probe Plug " (4-9, Fig. 1) into the " Plug Input Socket " (4-4, Fig. 1)

- 4) For the DO measurement, select the DIP Switch (4-7, Fig. 1) to Range 2 (DO) position.



Range 2 (DO position)

- 5) Switch On the ACV power source, the " Power Indicator " (4-3, Fig. 1) will light and start transferring mA signal out from the transmitter to signal receiving system.
- 6) The transmitter will generate 4 to 20 mA current output that according the sensing current that measure from DO probe.

Note :

0 mg/L = 4 mA

10 mg/L = 12 mA

20 mg/L = 20 mA

- 7) The Max. load for the output terminal is 200 ohm. So the total internal impedance of connecting wire should less than 200 ohm, other wise the accuracy will be changed and beyond the specification.

4. FRONT PANEL DESCRIPTION

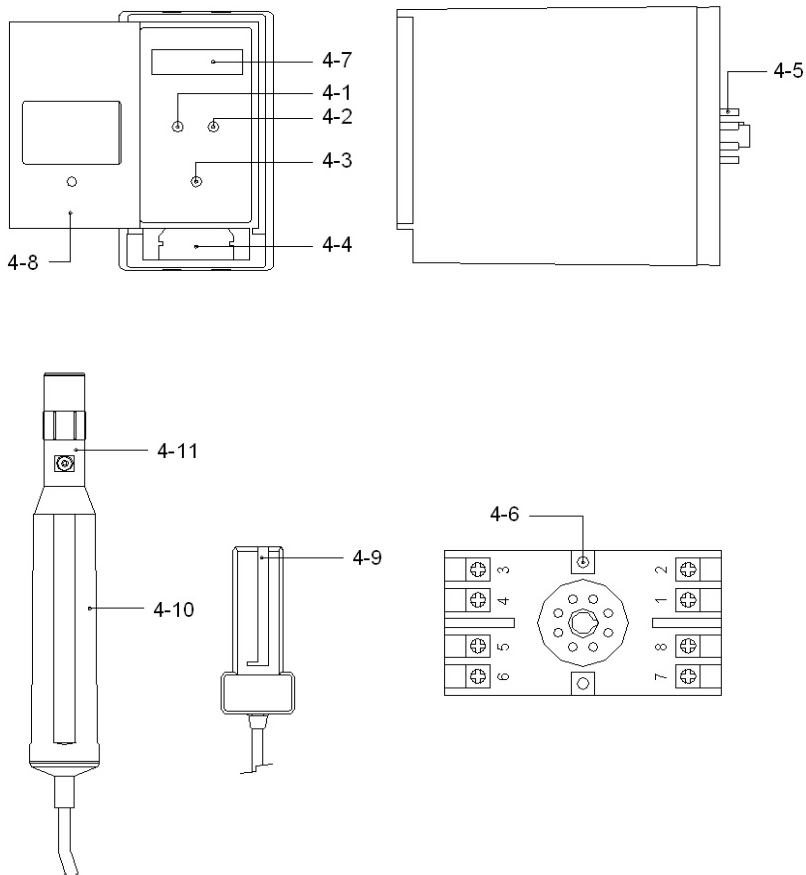
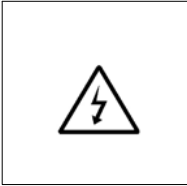


Fig. 1

- 4-1 Zero Adjust VR
- 4-2 Span adjust VR
- 4-3 Power Indicator
- 4-4 Probe Input Socket
- 4-5 Transmitter Output Connector
- 4-6 Wires Layout Socket
- 4-7 DIP Switch (Range 1/CAL, Range 2/DO)
- 4-8 Windows
- 4-9 DO Probe Plug
- 4-10 DO Probe Handle
- 4-11 DO Probe Sensing Head

5. MEASURING CONSIDERATION



Caution :

- * Risk of electric shock !
- * Do not apply power supply voltage over ACV 260 V



Caution :

- * Do not apply voltage into the " Probe Input Socket "

5-1 Calibration

1) For the calibration, select the DIP Switch (4-7, Fig. 1) to Range 1 (CAL) position.



1 2 3

Range 1 (CAL position)

Before the measurement, it should make following calibration procedures first :

Zero Adjust VR (4 mA Adjust VR)

1) Disconnect the " DO Probe Plug " (4-9, Fig. 1)

Note :

Not Connect the " DO Probe Plug " (4-9, Fig. 1) into the " Probe Input Socket " (4-4, Fig. 1)

2) Power ON the transmitter.

3) Adjust the " Zero Adjust VR (4 mA adjust VR) " (4-1, Fig. 1) until output terminal generate the 4 mA DC.

Span adjust VR (20 mA Adjust VR)

1) Connect the " DO Probe Plug " (4-9, Fig. 1) into the " Probe Input Socket " (4-4, Fig. 1), take away the Probe Head " cover, expose the " Probe Head " on the ventilating air environment and wait at least two minutes then power ON the transmitter.

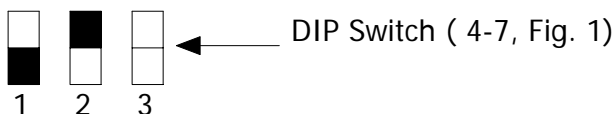
2) Adjust the " Span Adjust VR (20 mA adjust VR) " (4-2, Fig. 1) until output terminal generate the 12.36 mA DC exactly.

Consideration :

Please make calibration procedures under wide and ventilating environment for best effect.

5-2 Dissolved Oxygen(DO) measurement

- 1) After the meter be calibrated (above procedure 5-1), now the transmitter is ready for Dissolved Oxygen (DO) measurement.
- 2) For the DO measurement, select the DIP Switch (4-7, Fig. 1) to Range 2 (DO) position.



- 3) a. Immersed the probe to a depth at least 10 cm of the measured liquid in order for the probe to be influenced by the temp. & automatic temperature compensation to take place
b. As for the thermal equilibrium to occur between the probe & the measurement sample must be allowed to pass, which usually amounts to a few minutes if the temp. difference between the two is only several C degrees.
- 4) In order to measure the dissolved oxygen content in any given liquid, it is sufficient to immerse the tip of the probe in the solution, making sure that velocity of the liquid coming into contact with the probe is at least 0.2 - 0.3 m/s or shake the probe.
- 5) Rinsed the probe accurately with normal tap water after each series of measurement.

6. PROBE MAINTENANCE

User first time to use the meter :

Intend to let the DO probe keep the best condition. When user receive the DIGITAL OXYGEN METER along the PROBE, it should fill the Probe's Electrolyte at first.

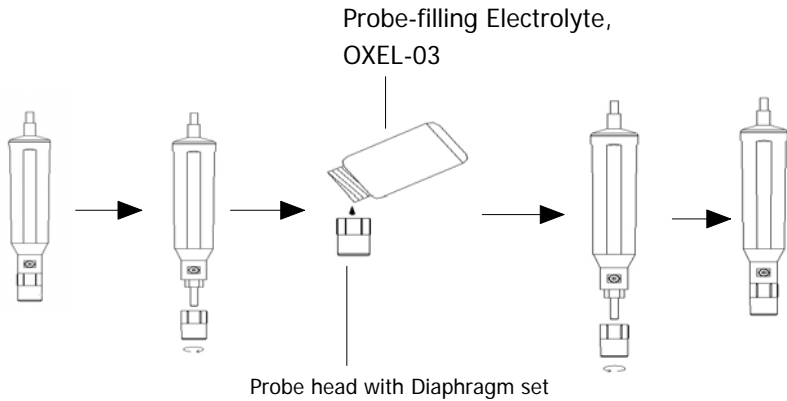
User already use the meter for a certain period :

Whenever user can not calibrate the meter properly or the meter's reading value is not stable, please check the oxygen probe to see if the electrolyte in the probe head container is run out or the diaphragm (probe head with diaphragm set) exist problem (dirty). If yes, please fill the electrolyte or change the " Probe head with diaphragm set " and make the new calibration.

The consideration of Diaphragm (probe head with diaphragm set) :

The oxygen probe component is the thin Teflon diaphragm housed in the tip of the probe. The diaphragm is permeable by the oxygen molecules but not by the considerably larger molecules contained in the electrolyte. Due to this characteristic, the oxygen may diffuse throughout the electrolyte solution contained in the probe, and its concentration may be quantified by the measurement circuit.

This sensitive diaphragm is rather delicate & is easily damaged if it comes into contact with solid objects or is subjected to blows. If the diaphragm is damaged or the electrolyte is run out, it must be replaced in the following way :



- 1) Unscrew the " Probe head " (6-3, Fig 2) .
- 2) Pour out the old Electrolyte from the container of the " Probe head " .
- 3) Fill the new Electrolyte (OXEL-03) into the container of the " Probe head " .
- 4) Screw the " Probe head " (6-3, Fig 2) into the probe body.

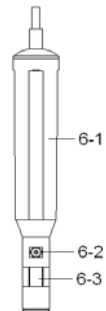
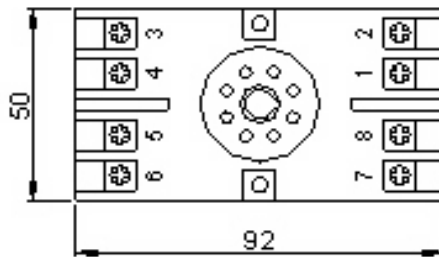
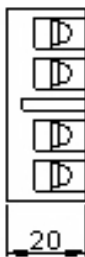
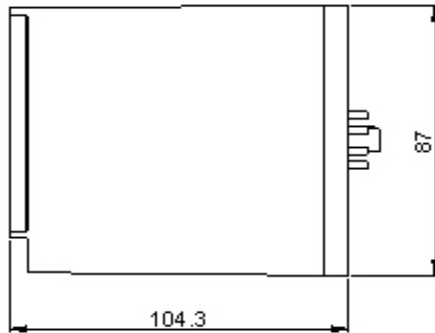
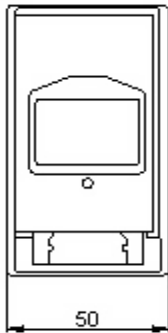


Fig. 2

- 6-1 Probe handle
- 6-2 Temp. sensing metal
- 6-3 Probe head

7. DIMENSION DIAGRAM



8. THE ADDRESS OF AFTER SERVICE CENTER

